E7.3 10.457
CR-13/257

TYPE I PROGRESS REPORT FOR ERTS-I INVESTIGATION FOR THE PERIOD ENDING APRIL 15, 1973

Submitted by Y.W. Isachsen, N.Y.S. Geological Survey,
N.Y.S. Museum and Science Service

A. Objective: To evaluate ERTS-I data for usefulness as a geological sensor in the diverse geological terranes of New York State.

B. GSFC ID S348, NAS 5-21764

C. Problems: 1:250,000 enlargements received from EROS were incorrectly scaled causing a one month delay to date in evaluation of ERTS imagery at that scale.

D. Accomplishments:

1. To date, more than 3000 ERTS-I film products have been received, covering 218 frames over 34 image areas. All have been catalogued and categorized in terms of geological usefulness as a function of cloud-cover distribution, and all have been evaluated for Image Descriptors. All except those received during the past two weeks have been analyzed for "spectral geological" content by conventional photo-geological methods. The 70 mm images for 20 scenes have been photographically reprocessed for color additive viewing which is now underway.

2. Of 230 new ERTS linear features which at 1:1,000,000 could not be eliminated as cultural, 97 have been located on airfoto index sheets at 1:62,500 for purposes of screening and transfer of remaining anomalies to 1:62,500 field map sheets. Of these, 26 correspond to stream valleys, 23 are portions of highways, 17 parallel lithological trends, 17 are not explained by the airfoto index sheets, 7 are vegetation borders, 5 are transmission lines, and 4 are either ridge crests or sharp topographic breaks in slope.

ERTS-I Data User Investigation
Publication and Information Release Policy

Author-identified significant results

Y.W. Isachsen, R.H. Fakundiny and S.W. Forster, Geological Survey, New York State Museum and Science Service, Albany, New York,
12April72, NAS5-21764

The straight NNE-trending escarpment that marks the easternmost extent of the Catskill Mountains appears, from ERTS-I imagery (1079-15124) to be related to a set of parallel topographic lineaments which occur over a distance of 40 km to the west. Ground investigation will follow.

The October 11 imagery of the Adirondacks (1080-15174) displays the pre-Paleozoic erosion surface along the western and northern margin of the Adirondack Mountains dome. The northern portion of this paleoplain is terminated to the southeast by an escarpment following an ENE topographic linear to produce a pseudo-cuesta.

The snow-covered terrain in the Mohawk Valley between Albany and Rome (1170-15182 and 1169-15123) displays with sculptural clarity a drumlin field having a cloud-free area of about 2600 Km^2; glacial flow directions can be plotted readily because the stoss and lee sides of the drumlins can be distinguished. In the imagery of summer and fall, agricultural patterns obscured the detail which is visible in the winter imagery.

3. A composite generalized soils map was assembled at 1:1,000,000 for the thirteen western New York counties and compared with a band 5 "reflectance map" made from images 1080-15180, 1027-15233, and 1046-15292 for October 11, August 19 and September 7, 1972 respectively. There was, at best, a 10 percent correlation between the two maps, the ERTS "map" reflecting topographic variations rather than either soils or glacial deposits. A similar comparison will be made using spring imagery, to avoid the land-use camouflage pattern of late summer and early fall.

E. Planned:

1. Continuing photo-geological and color additive analysis and evaluation of incoming ERTS-I imagery at 1:1,000,000, to extract any additional spectral information having possible geological linkage. The imagery for spring may be more closely-linked to bedrock geology than that of full foliage or snow cover.

2. Continuing laboratory-library evaluation of spectral anomalies.

3. Analysis of our first shipment from EROS of imagery at 1:500,000, to determine what additional "spectral-geological" detail can be seen at that scale.

4. Field reconnaissance of the Cranberry Lake oval feature.

5. Low-level aerial reconnaissance and photography of selected ERTS anomalies as a guide to selection of promising areas for ground study.

6. Study of spring imagery that may become available for the western part of the State to compare ERTS imagery with existing soils and glacial features maps.

F. Publications and Lectures:

Papers given and results published as follows, at NASA/Goddard Symposium and the Northeastern Section, Geological Society of America:

1. Evaluation of ERTS-1 imagery for geological sensing over the diverse geological terranes of New York State. In symposium on significant results obtained from ERTS-I, Abstracts. NASA/Goddard Space Flight Center. Full paper in press.

2. Geological features and spectral anomalies in satellite imagery of the Adirondack Mountain region. Abstracts with Programs, Geol. Soc. Am., Northeast Section Meeting pp. 180-181, 1973.

G. Recommendations:

None at this time.

H. Standing order:

No changes beyond that attached which was submitted 6Apr73.

I. ERTS image descriptor forms:

Attached, two pages

J. Data request form:

Data request forms are attached as follows:

1. New request, dated 10Apr73.

2. Request submitted 6Apr73.

K. The content of this report falls under subdiscipline 3M.

YWI:dm

4

NDPF USE ONLY

D _____
N _____
ID _____
DTM _____
TM _____
TM APP. _____

ERTS DATA REQUEST FORM
560-213 (7/72)

1. DATE 10 Apr 73

2. USER ID ST 348

4. SHIP TO: Y.W. Isachsen

ADDRESS Geol. Survey ☐ NEW
New York State Museum and
Science Service,
Albany, N.Y. 12224

5. TELEPHONE NO. (518)474-5819 ☐ NEW

6. CATALOGUES DESIRED

STANDARD ☐ U.S. ☐ NON-U.S.

DCS ☐

MICROFILM ☐ U.S. ☐ NON-U.S.

ADDDHHMMS OBSERVATION IDENTIFIER	C CENTER POINT COORDINATES	B SENSOR BAND	P PRODUCT TYPE	F PRODUCT FORMAT	T TICK MARKS	NN NUMBER OF COPIES	A AREA
1167-15013	C N41-39/ W071-32	7	B	F		2	U
1168-15063	C N44-30/ W071-55	7	B	P		2	U
1132-15065	C N44-28/ W072-00	7	B	P		2	U
1168-15065	C N43-04/ W072-27	7	B	P		2	U
1204-15074	C N41-41/ W073-03	7	B	P		2	U
1132-15080	C N40-13/ W073-33	7	B	P		2	U
1186-15075	C N40-24/ W073-26	7	B	P		2	U
1169-15114	C N45-55/ W072-46	7	B	P		2	U
1169-15121	C N44-30/ W073-20	7	B	P		2	U
1169-15123	C N43-05/ W073-52	7	B	P		2	U
1205-15132	C N41-48/ W074-30	7	B	P		2	U
1133-15135	C N40-13/ W074-59	7	B	P		2	U
1197-15133	C N40-22/ W074-55	7	B	P		2	U
1205-15135	C N40-23/ W075-00	7	B	P		2	U
1116-15174	C N45-57/ W074-19	7	B	P		2	U

NDPF USE ONLY

D
N
ID
DTM
TM
TM APP.

ERTS DATA REQUEST FORM
560-213 (7/72)

1. DATE 10 Apr 73

2. USER ID ST 348

4. SHIP TO: Y.W. Isachsen

ADDRESS Geol. Survey ☐ NEW
New York State Museum and
Science Service,
Albany, N.Y. 12224

5. TELEPHONE NO. (518)474-5819 ☐ NEW

6. CATALOGUES DESIRED

STANDARD ☐ U.S. ☐ NON-U.S.

DCS ☐

MICROFILM ☐ U.S. ☐ NON-U.S.

ADDDHHMMS OBSERVATION IDENTIFIER	C CENTER POINT COORDINATES	B SENSOR BAND	P PRODUCT TYPE	F PRODUCT FORMAT	T TICK MARKS	NN NUMBER OF COPIES	A AREA
1206-15175	C N46-03/ W074-18	7	B	P		2	U
1170-15175	C N44-27/ W074-45	7	B	P		2	U
1206-15182	C N44-38/ W074-52	7	B	P		2	U
1116-15181	C N44-32/ W074-53	7	B	P		2	U
1170-15182	C N43-02/ W075-17	7	B	P		2	U
1170-15184	C N41-36/ W075-49	7	B	P		2	U
1170-15191	C N40-10/ W076-20	7	B	P		2	U
1171-15245	C N40-10/ W077-46	7	B	P		2	U
1190-15293	C N44-40/ W077-37	7	B	P		2	U
1046-15301	C N40-10/ W079-15	7	B	P		2	U
1120-15413	C N43-05/ W081-07	7	B	P		2	U

NDPF USE ONLY

D _____
N _____
ID _____
DTM _____
TM _____
TM APP. _____

ERTS DATA REQUEST FORM
560-213 (7/72)

1. DATE 10 Apr 73

2. USER ID ST 348

4. SHIP TO: Y.W. Isachsen

ADDRESS Geol. Survey ☐ NEW

New York State Museum and

Science Service,

Albany, N.Y. 12224

5. TELEPHONE NO. (518)474-5819 ☐ NEW

6. CATALOGUES DESIRED

STANDARD ☐ U.S. ☐ NON-U.S.

DCS ☐

MICROFILM ☐ U.S. ☐ NON-U.S.

ADDDHHMMS OBSERVATION IDENTIFIER	C CENTER POINT COORDINATES	B SENSOR BAND	P PRODUCT TYPE	F PRODUCT FORMAT	T TICK MARKS	NN NUMBER OF COPIES	A AREA
1167-15013	C N41-39/ W071-32	7	B	T		1	U
1168-15063	C N44-30/ W071-55	7	B	T		1	U
1132-15065	C N44-28/ W072-00	7	B	T		1	U
1168-15065	C N43-04/ W072-27	7	B	T		1	U
1204-15074	C N41-41/ W073-03	7	B	T		1	U
1132-15080	C N40-13/ W073-33	7	B	T		1	U
1186-15075	C N40-24/ W073-26	7	B	T		1	U
1169-15114	C N45-55/ W072-46	7	B	T		1	U
1169-15121	C N44-30/ W073-20	7	B	T		1	U
1169-15123	C N43-05/ W073-52	7	B	T		1	U
1205-15132	C N41-48/ W074-30	7	B	T		1	U
1133-15135	C N40-13/ W074-59	7	B	T		1	U
1187-15133	C N40-22/ W074-55	7	B	T		1	U
1205-15135	C N40-23/ W075-00	7	B	T		1	U
1116-15174	C N45-57/ W074-19	7	B	T		1	U

NDPF USE ONLY

D _____
N _____
ID _____
DTM _____
TM _____
TM APP. _____

ERTS DATA REQUEST FORM
560-213 (7/72)

1. DATE 10 Apr 73

2. USER ID ST 348

4. SHIP TO: Y.W. Isachsen

ADDRESS Geol. Survey ☐ NEW

New York State Museum and

Science Service,

Albany, N.Y. 12224

5. TELEPHONE NO. (518)474-5819 ☐ NEW

6. CATALOGUES DESIRED

STANDARD ☐ U.S. ☐ NON-U.S.

DCS ☐

MICROFILM ☐ U.S. ☐ NON-U.S.

ADDDHHMMS OBSERVATION IDENTIFIER	C CENTER POINT COORDINATES	B SENSOR BAND	P PRODUCT TYPE	F PRODUCT FORMAT	T TICK MARKS	NN NUMBER OF COPIES	A AREA
1206-15175	C N46-03/ W074-18	7	B	T		1	U
1170-15175	C N44-27/ W074-45	7	B	T		1	U
1206-15182	C N44-38/ W074-52	7	B	T		1	U
1116-15181	C N44-32/ W074-53	7	B	T		1	U
1170-15182	C N43-02/ W075-17	7	B	T		1	U
1170-15184	C N41-36/ W075-49	7	B	T		1	U
1170-15191	C N40-10/ W076-20	7	B	T		1	U
1171-15245	C N40-10/ W077-46	7	B	T		1	U
1190-15293	C N44-40/ W077-37	7	B	T		1	U
1046-15301	C N40-10/ W079-15	7	B	T		1	U
1120-15413	C N43-05/ W081-07	7	B	T		1	U

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

NDPF USE ONLY
D
N
ID

DATE 10 Apr 73

PRINCIPAL INVESTIGATOR Y.W. Isachsen

GSFC S 348

ORGANIZATION Geol. Survey, N.Y. State Museum & Science Service

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Ridge	Linmnt.	Fold	
1028-15295-5	✓	✓	✓	
1046-15292-5				Finger lake.
1046-15295-5	✓	✓		
1120-15413-5				Snow.
1148-14563-5				Atlantic Ocean.
1150-15064-5				Frozen lake, Snow.
1150-15080-5				Excessive Cloud Cover.
1152-15181-5				Excessive Cloud Cover.
1152-15183-5				Excessive Cloud Cover.
1152-15190-5				Excessive Cloud Cover.
1152-15192-5				Excessive Cloud Cover.
1154-15294-5				Excessive Cloud Cover.
1154-15300-5				Excessive Cloud Cover.
1154-15303-5				Excessive Cloud Cover.
1155-15352-5				Excessive Cloud Cover.
1155-15301-5				Excessive Cloud Cover.
1167-15013-5		✓		Barrier Bar, Coast, Snow.
1167-15020-5				Barrier Bar, Coast.
1169-15114-5	✓	✓	✓	Alluvial Plain, Frozen Lake, Snow.
1169-15121-5	✓	✓	✓	Frozen Lake, Snow.
1169-15123-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1169-15130-5	✓	✓		Coast, Snow.
1169-15132-5				Excessive Cloud Cover.
1170-15173-5		✓		Frozen Lake, Snow.
1170-15175-5	✓	✓	✓	Frozen Lake, Snow.
1170-15182-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1170-15184-5	✓	✓	✓	
1170-15191-5	✓	✓	✓	
1171-15231-5	✓	✓		Frozen Lake, Snow.

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

MAIL TO ERTS USER SERVICES
CODE 563
BLDG 23 ROOM E413
NASA GSFC
GREENBELT, MD. 20771
301-982-5406

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

NDPF USE ONLY
D
N
ID

DATE 10 Apr 73 (Page 2 of 2)

PRINCIPAL INVESTIGATOR Y.W. Isachsen

GSFC S 348

ORGANIZATION Geol. Survey, N.Y. State Museum & Science Service

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Ridge	Linmnt.	Fold	
1171-15234-5	✓	✓	✓	Frozen Lake, Snow.
1171-15240-5				Finger Lake, Frozen Lake.
1171-15243-5	✓	✓	✓	Anticline, Syncline.
1171-15245-5	✓	✓	✓	Anticline, Syncline.
1172-15292-5	✓	✓	✓	Frozen Lake, Snow.
1172-15294-5				Snow.
1172-15301-5	✓	✓	✓	Snow.
1173-15350-5	✓	✓		Frozen Lake, Snow.
1173-15353-5				Snow.
1173-15355-5				Frozen Lake, Snow.
1174-15411-5				Snow.
1185-15021-5				Coast, Finger Lake, Snow.
1185-15015-5				Barrier Bar, Coast.
1185-15021-5				Barrier Bar, Coast.
1186-15063-5	✓	✓		Frozen Lake, Snow.
1186-15070-5	✓	✓		Frozen Lake, Snow.
1186-15072-5	✓	✓		Coast, Snow.
1186-15075-5	✓	✓		Barrier Bar, Coast.
1190-15293-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1190-15300-5				Snow.
1190-15302-5				Excessive Cloud Cover.
1190-15305-5	✓	✓		

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

MAIL TO ERTS USER SERVICES
CODE 563
BLDG 23 ROOM E413
NASA GSFC
GREENBELT, MD. 20771
301-982-5406

GSFC 37-2 (7/72)

NDPF USE ONLY

D _____
N _____
ID _____
DTM _____
TM _____
TM APP. _____

ERTS DATA REQUEST FORM
560-213 (7/72)

1. DATE 6 Apr 73

2. USER ID ST 348

4. SHIP TO: Y.W. Isachsen

ADDRESS Geol. Survey ☐ NEW

New York State Museum and

Science Service

Albany, N.Y. 12224

5. TELEPHONE NO. (518)474-5819 ☐ NEW

6. CATALOGUES DESIRED

STANDARD ☐ U.S. ☐ NON-U.S.

DCS ☐

MICROFILM ☐ U.S. ☐ NON-U.S.

ADDDHHMMS OBSERVATION IDENTIFIER	C CENTER POINT COORDINATES	B SENSOR BAND	P PRODUCT TYPE	F PRODUCT FORMAT	T TICK MARKS	NN NUMBER OF COPIES	A AREA
1080-15174	C N44-36/ W074-44	4	D	7		1	U
		5	D	7		1	U
		6	D	7		1	U
		7	D	7		1	U